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08/29/2001

Daisaku Horie

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EXAMINER

ROSARIO-VASQUEZ, DENNIS

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

,09/940,623

Applicant(s)

HORIE, DAISAKU

Examiner

Dennis Rosario-Vasquez

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/29/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. The following quotations of 37 CFR § 1.75(a) is the basis of objection:  

(a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.
2. Claims 1 and 16 are objected to under 37 CFR § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Claim 1, line 5 is referring to "said detected edges" which is referring to line 3 where "an edge", not edges is detected. Line 3, at "detect an edge" ought to be amended to "detect edges" to correspond with "said detected edges" of line 5.

Claim 16, line 10 has the phrase "same attribute of image". Claim 16 is not clear whether the "same attribute of image" is contained within the "lightness image", line 4 or original image, lines 2,3.

Claim 16, line 10 ought to be amended to read "same attribute of **the lightness** image."

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1,2,4,6,7,8,9,10,11,12,13,14,15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ricard (US Patent 6,731,795 B1).

Regarding claims 1 and 11, Ricard discloses an image processing apparatus and method, comprising:

- a) a receiving unit 116 of fig. 1 is a scanner to receive a scanned image as mentioned in col. 3, lines 44,45;
- b) an edge detecting unit (or algorithm) to detect an edge using a lightness (or intensity) component of said received image (as mentioned in col. 9, lines 40-43 and 45-47);
- c) a selecting unit to select a specific one of said detected edges  
(A computer program of fig. 3B prompts a user at step 312 to select a rectangular area that corresponds to an edge detected by the algorithm as mentioned in col. 9, line 49-53); and
- d) a correcting unit to correct the lightness component of said selected specific edge.

A computer program of fig. 4 is a correcting unit that removes creases and corrects the lightness component or shade as shown in the program of fig. 4 at step 405 as mentioned from col. 6, lines 66,67 and col. 8, lines 6-18.

Regarding claim 2, Ricard discloses the image processing apparatus according to claim 1, further comprising an extracting unit or a machine-executed algorithm as mentioned in col. 9, lines 40-62 to extract or scan an original or suspect area included in said image, wherein said selecting unit selects the edge continuously extending from a first end to a second end of said extracted original (The selecting unit prompts a user to either use the suspect area or not that was detected by the machine-executed algorithm based on criteria of a relatively long and narrow area or a fold of a paper as mentioned in col. 9, lines 47-53 and from col. 5, line 64 to col. 6, line 1. Thus a folded paper will have a long and narrow area from end to end or the paper.).

Regarding claim 4, Ricard teaches the image processing apparatus according to claim 1, further comprising an attribute detecting unit (or scanner that scans suspect areas to detect attributes or color values that includes intensity as mentioned in col. 2, lines 35,36) of two regions (, suspect area and neighboring pixels (col. 9, lines 46,47),) separated by the edge (using criteria (a) as mentioned in col. 9, lines 44-47) detected by said edge detecting unit (or machine-executed algorithm mentioned in col. 9, lines 40-43),

wherein said selecting unit selects said detected edge as the specific edge when said detected attributes of said two regions are identical to each ("two regions, a "suspect area" and "neighboring pixels" correspond with the claimed two regions.)...have a same attribute of image (Note that a color value has "attributes" of shade as mentioned in col. 2, line 36. Thus, the two portions, "suspect area" and "neighboring pixels" which contains "color" in col. 9, lines 45-46, have the same color value attribute of shade.)..."

Claim 6 is similar to claim 1 except for requiring a computer readable recording medium recording an image processing program. Fig. 2 has a memory 102 that contains image applications 203 and crease remover 204.

Claims 7 and 12 have been addressed in claim 2.

Claim 8 has been addressed in claim 3.

Claim 9 has been addressed in claim 4.

Claim 10 has been addressed in claim 5.

Claim 13 has different claim language than claim 1, but both are directed towards the same functions. Therefore claim 13 has been addressed in claim 1.

Claim 14 is similar to claims 1 and 3 except for the limitation of an acquiring unit to acquire an image signal expressing a color original image with three components. Ricard discloses a computer display as the claimed acquiring unit that displays "color values" that contain "shade, intensity, and hue and shade without hue" in col. 2, lines 35-38.

Claim 15 has been addressed in claims 1 and 14.

Claim 16 has been addressed in claims 1,4 and 14.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ricard (US Patent 6,731,795 B1) in view of moed et al. (US Patent 6,141,433 A).

Regarding claim 3, Ricard teaches the image processing apparatus according to claim 1, further comprising a converting unit (A scanner of fig. 1, num. 115 is a scanner that converts a non-digital medium to a digital medium in col. 1, lines 56,57.) to convert said received image into a lightness image including the lightness component (Ricard teaches that the digital image includes attributes such as shade, intensity or brightness in col. 2, lines 34-38. Thus the converted digital image contains the above attributes.) and a color difference image including a color difference component (Ricard does not teach the previous portion of converting an image to a color difference image, but does suggest using differences of colors of an image in col. 9, lines 45-47.), wherein

said edge detecting unit detects the edge from said converted lightness image (This limitation was addressed in claim 1.), and

said selecting unit selects the edge detected from said lightness image (The previous portion of this limitation was addressed in claim 1.) and from a color difference image as the specific edge (Ricard teaches that several criteria that needs to be met for detecting an edge, and one of the criteria is large difference in color in col. 9, lines 45-47.)

Ricard does not teach the limitations of converting an image to a color difference image and detecting an edge that is undetected from a color difference image.

Regarding claim 3, Moed et al., in the field of endeavor of region extraction, teaches an image processing apparatus fig.1, num. 100, further comprising a converting unit fig. 1, num. 120 to convert said received image (from video camera 110) into a lightness image (A luminance image in col. 4, lines 19,20 of the Moed reference corresponds to the claimed lightness image.) including the lightness component, (A "Y component" in col. 4, line 43 of the Moed reference corresponds to the lightness component of the luminance image.), and a color difference image including a color difference component (A difference image is "generated" that has a "U" color component in Moed et al., col. 4, lines 24,25,38.), wherein

an edge detecting unit detects the edge from said converted lightness image (Fig. 5 or fig. 3, num. 400 is a computer program of the Moed reference that corresponds to the claimed edge detecting unit that "extracts" edges using the luminance image "in the initial region set" of fig. 5, step 420. Note that the initial region set contains "luminance" components from a "luminance image" in col. 6, lines 37-39.), and



a selecting unit that selects the edge detected from said lightness image and undetected from said color difference image as the specific edge (Computer programs of figures 6 and 7 mentioned from col. 7, line 51 to col. 8, line 37 select edges as shown in fig. 13 by bold, black lines and mentioned in col. 8, lines 34-37 from a set of detected edges using the results of a program 300 of fig. 3 that creates the set of edges that are detected using a luminance difference image and a color difference image in fig. 3, num. 300 or fig. 4, step 310. Note that the color difference image is given less weight for detecting the edge in col. 5, lines 42-46 and 59-63 using the program 300 of fig. 3. Therefore edges of the color difference image will not have a lot of emphasis due to a lesser weighting as compared to the luminance difference image.)

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Ricard's teaching of converting an image to a digital image with color attributes with Moed et al.'s teaching of using a color difference image for detecting edges as taught by Ricard, because Moed et al.'s teaching of using a color difference image "is based on several basic ideas" for segmenting objects in col. 3, lines 20-23.

Regarding claim 5, Ricard teaches the image processing apparatus according to claim 1, further comprising a luminance value calculating unit to calculate a luminance value of said received image (Figure 4, step 405 is part of a program that computes shade values that correspond to a luminance value.), wherein

said selecting unit selects said detected edge as the specific edge when a difference between the background luminance values of two regions each at a prescribed distance in opposite directions from said detected edge is smaller than a prescribed value.

(The program step 312 of fig. 3B, which prompts a user to select a line, is graphically shown in fig. 5 that shows the detected edge enclosed by a line with endpoints A and B which contain pixel  $A_1$  and  $B_1$  that are on opposite sides of the edge used to compute shade differences as a function of distance using the top most formula of col. 8.)

Ricard does not teach the limitation of a background luminance value and a difference of a luminance background value that is smaller than a prescribed value, but Ricard does suggest computing intensity differences that correspond to the claimed luminance values that are large differences for detecting edges in col. 9, lines 45,46.

In addition, Moed does suggest computing a background intensity value in col. 5, lines 40,41 that corresponds to the claimed background luminance value and a "Y difference image" that includes a background value in col. 4, lines 37-42 that corresponds with the claimed difference of a luminance background that is compared with a threshold in col. 4, lines 49-65 which corresponds with the claimed prescribed value.

The combination of Ricard and Moed does not teach a background luminance difference smaller than a prescribed value.

However, Matsugu et al., in the field of endeavor of image extraction, teaches a background luminance difference smaller than a prescribed value.

Matsugu et al. states, " In step S41, pixels at which the difference data between the normalized edge intensity subject image and the normalized edge intensity background image is equal to or smaller than a predetermined threshold value... are removed to leave only reliable subject edge data (col. 16, lines 1-6)."

Thus, optimum edges are retained from edges from both a background image and an object image, while the remaining edges from the background and object images are removed.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Ricard's teaching of selecting an edge as mentioned above using figure 5 with Matsugu et al.'s teaching of selecting an optimum edge, because Matsugu et al.'s teaching "stably extract[s] the subject region with a correct shape independently of the contour pattern present in neighboring region of the boundary between the subject image and the background image (Matsugu et al., col. 15, lines 41-45)."

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rudak et al. (US Patent 6,317,223 B1) is pertinent as teaching a method of separating edges due to noise fig. 2E,num. 50 from contours of preprinted edges as shown in fig. 4C.

Lawton et al. (US Patent 6,226,054 B1) is pertinent as teaching a method of selecting an edge based on attributes in fig. 3, num. 64.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario-Vasquez whose telephone number is 703-305-5431. The examiner can normally be reached on 9-5.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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